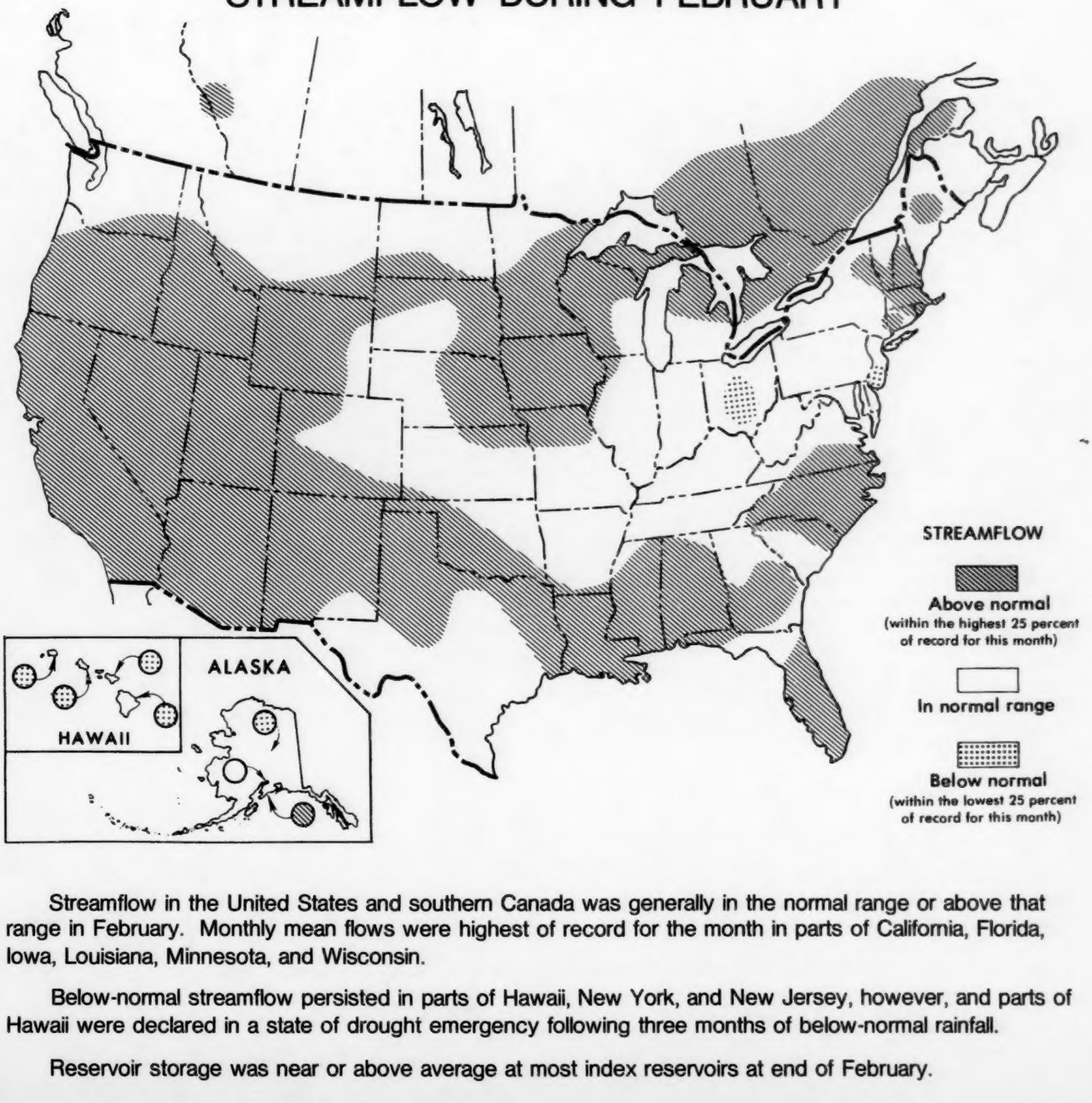
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

FEBRUARY 1983

STREAMFLOW DURING FEBRUARY



Streamflow in the United States and southern Canada was generally in the normal range or above that range in February. Monthly mean flows were highest of record for the month in parts of California, Florida, Iowa, Louisiana, Minnesota, and Wisconsin.

Below-normal streamflow persisted in parts of Hawaii, New York, and New Jersey, however, and parts of Hawaii were declared in a state of drought emergency following three months of below-normal rainfall.

Reservoir storage was near or above average at most index reservoirs at end of February.

STREAMFLOW CONDITIONS DURING FEBRUARY 1983

Streamflow generally decreased seasonally in southern Canada, adjacent parts of the United States, and also in parts of Colorado, Oregon, Texas, Utah and Wyoming. Mean flows increased in most of the Southeast, and also in Iowa, Nevada, Ohio, Oklahoma, Kansas, Nebraska, South Dakota, and in the central New England States. Flows were variable elsewhere in the United States.

Monthly mean flows remained in the above-normal range in parts of the Gulf Coastal States and in a broad band extending from eastern Quebec to Oregon and California, and increased into that range in parts of Oklahoma, South Carolina, North Carolina, Virginia, and in Connecticut and parts of adjacent States. Monthly and/or daily mean flows were highest of record for the month in parts of Florida, Iowa, Louisiana, Minnesota, Mississippi, and Wisconsin. See table of new maximums at the bottom of page 3.

Below-normal streamflow persisted in parts of Hawaii, New York, and New Jersey. Drought conditions prevailed in Hawaii where precipitation has been much below normal and where monthly mean flows at all streamflow index stations were below the normal range. On February 15, parts of the island of Hawaii were declared in a state of drought emergency by Mayor Herbert Matayoshi after three months of below-normal rainfall. Water restrictions were posted for the Puna and Kamuela Districts. The monthly mean flow of 0.05 cubic foot per second (cfs) and zero flow on several days during the month at Waiakea Stream near Mountain View (drainage area, 17.4 square miles) were lowest for the month in 53 years of record. The previous monthly low of 0.13 cfs occurred at that site in February 1941.

In contrast to the record low flows in Hawaii, floods with recurrence intervals that ranged up to 50 years occurred in parts of North Carolina. For example, runoff from near record rainfall for the month caused flows in the above-normal range and widespread minor to moderate flooding across the State. In the western part of the State, flood peaks on the 2nd and 3rd reached the 50-year recurrence interval level on the Pigeon River at Canton and the 10-year level on the Watauga River at Sugar Grove.

In Indiana, no widespread flooding was reported but runoff from rains of one to two inches early in the month produced crests near floodstage along the White River between Elliston and Hazelton on February 4–6. Snowcover was below-normal and limited to the area around Lake Michigan at monthend.

In southeastern Oklahoma, runoff from moderate rains of 3 to 4 inches on February 1 and again on February 20–21 caused some streams to reach or exceed bankfull stages. In the west-central part of the State, monthly mean flow of Washita River near Dickson increased seasonally and was in the above-normal range for the first time since August 1982.

In Iowa and Nebraska, streamflows increased sharply at midmonth as a result of snowmelt runoff, and some lowland flooding resulted from ice jams. In northeastern Nebraska, monthly mean flow of Elkhorn River at Waterloo (drainage area, 6,900 square miles) increased sharply to 5 times the median flow for February, was above the normal range for the 10th consecutive month, and the monthly mean flow of 4,180 cfs was second highest for February in 63 years of record.

In southeastern Alabama, mean flow of Conecuh River at Brantley increased to nearly twice the median flow for the month and was in the above-normal range for the third consecutive month. Similarly, in central Oregon, monthly mean flow of John Day River at Service Creek increased seasonally to twice the February median flow but remained in the above-normal range for the 10th consecutive month. In northern Kansas, monthly mean flow of Little Blue River near Barnes also increased seasonally, was 176 percent of median and was in the above-normal range for the second consecutive month. Hydrographs for these three index stations are shown at the top of page 3.

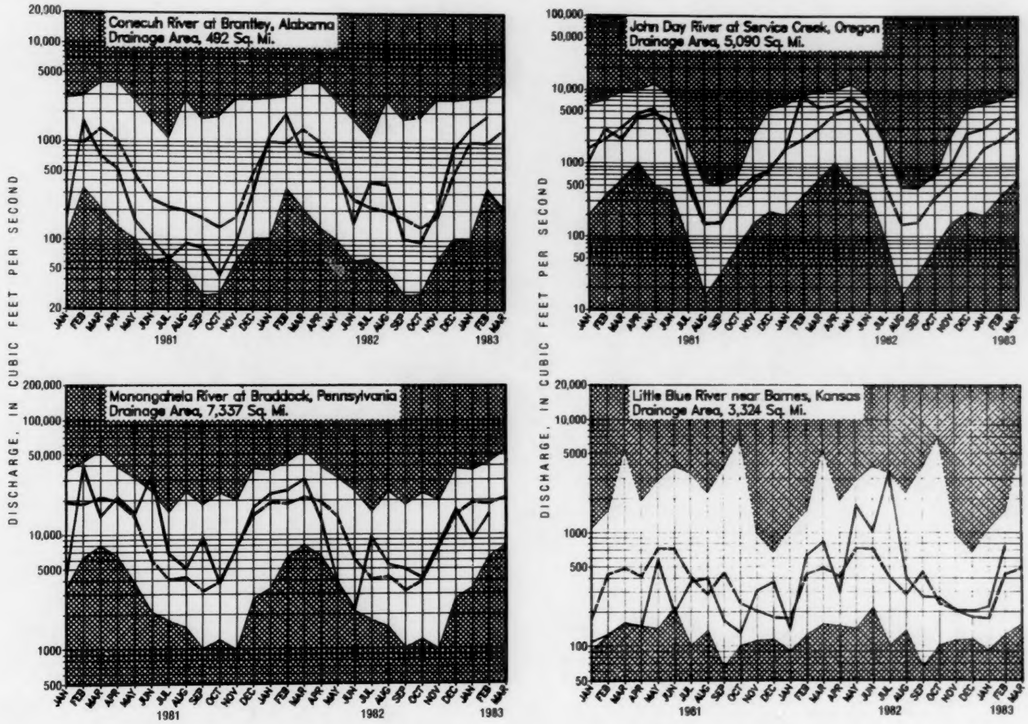
The above-normal trend in streamflow was again reflected in the combined flow of three large rivers—Mississippi, St. Lawrence, and Columbia—which averaged 1,147,090 cfs during February, down 18 percent from last month but 11 percent above average for February. Because these three large rivers account for streamflow runoff for more than half of the conterminous United States, their combined flow provides a useful check on the status of the nation's water resources.

Monthend contents of principal reservoirs were near or above average at most locations during February.

CONTENTS

SURFACE WATER – MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951–80. Heavy line indicates mean for current period.



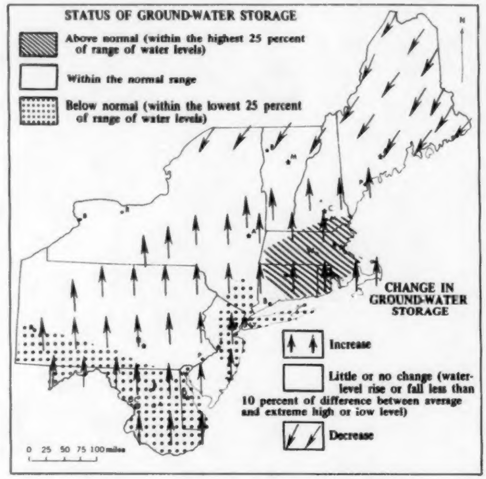
NEW MAXIMUMS DURING FEBRUARY 1983 AT STREAMFLOW INDEX STATIONS

Station number	Stream and place of determination	Drainage area (square miles)	Years of record	Previous February Maximums (period of record): Monthly mean in cfs (year)	Previous February Maximums (period of record): Daily mean in cfs (year)	February 1983: Monthly mean in cfs	February 1983: Percent of median	February 1983: Daily mean in cfs	February 1983: Day
02256500	Fisheating Creek at Palmdale, Florida	311	52	704 (1936)	2,740 (1942)	707	2,372	1,700	15
02489500	Pearl River near Bogalusa, Louisiana.	6,630	45	46,100 (1974)	85,700 (1961)	51,500	303	56,300	19
04071000	Oconto River near Gillett, Wisconsin.	678	72	567 (1966)	1,200 (1966)	677	203	901	25
05330000	Minnesota River near Jordan, Minnesota	16,200	49	3,463 (1966)	6,600 (1966)	3,671	727	10,600	27
05464500	Cedar River at Cedar Rapids, Iowa	6,510	81	8,629 (1915)	26,500 (1915)	8,880	728	22,300	25
05480500	Des Moines River at Fort Dodge, Iowa	4,190	51	2,280 (1952)	9,360 (1948)	4,066	1,936	10,920	24
07290000	Big Black River near Bovina, Mississippi	2,810	47	20,140 (1946)	46,000 (1946)	19,700	331	48,300	12,13
07352000	Saline Bayou near Lucky, Louisiana.	154	43	837 (1946)	4,890 (1946)	1,100	507	4,350	23
11425500	Sacramento River at Verona, California.	21,257	54	64,300 (1958)	80,700 (1980)	69,650	183	75,500	19

GROUND-WATER CONDITIONS DURING FEBRUARY 1983

The rising trend of ground-water levels continued in most of the Northeast. (See map.) Levels declined in northern and central Maine, and in extreme northern New Hampshire and Vermont and in northeastern New York State. Levels near end of February were near average in much of the region. However, above-average levels were common in wells in southern New England; levels in two observation wells in eastern Massachusetts were the highest end-of-February levels in more than 30 years at those measurement sites. In contrast to these high levels, below-average water levels persisted in most of Maryland, Delaware, northern and central New Jersey, and southeastern New York.

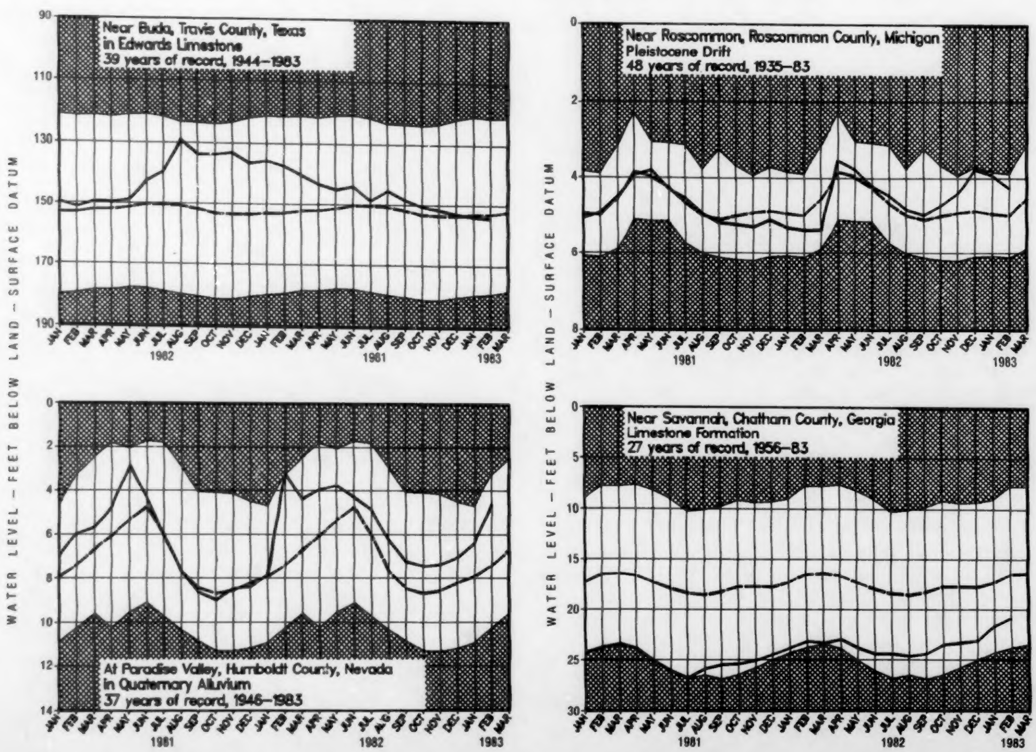
In the southeastern States, levels rose in response to recharge from precipitation that was above average in most of the region, especially in the coastal States. Above-average water-levels continued in observation wells in Alabama, Kentucky, Mississippi, and North Carolina. In northwestern West Virginia, water levels were above



Map shows ground-water storage near end of February and change in ground-water storage from end of January to end of February.

MONTH-END GROUND-WATER LEVELS IN KEY WELLS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates average of monthly levels in previous years. Heavy line indicates level for current period.



WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN THE CONTERMINOUS UNITED STATES—FEBRUARY 1983

Aquifer and location	Current water level in feet below land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota	-5.68	+3.39	-0.40	+1.09	1943	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan	-4.27	+0.75	-0.34	+1.10	1935	
Glacial drift at Marion, Iowa	-2.89	+3.17	+0.95	-0.60	1941	
Glacial drift at Princeton in northwestern Illinois	-8.50	+3.81	-1.00	-0.90	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia	-13.12	+1.46	+1.57	+1.95	1939	
Glacial outwash sand and gravel, Louisville, Kentucky	-18.84	+7.32	-0.03	-0.36	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2)	-102.03	-14.18	+0.39	+1.52	1941	
Granite in eastern Piedmont Province, Chapel Hill, North Carolina	-41.27	+1.62	+0.93	+3.44	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas	-232.45	-28.28	-2.50	+12.20	1958	
Copper Ridge and Chepultepec Dolomites, Centreville, Alabama	-25.7	+1.1	+1.2	+1.3	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia	-20.85	-4.03	+0.85	+2.85	1956	
Sand and gravel in Puget Trough, Tacoma, Washington	-101.35	+8.04	+1.63	+2.09	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3)	-459.0	+3.2	+0.2	+7.9	1929	
Snake River Group: southwestern Snake River Plain aquifer, at Eden, Idaho	-127.5	-8.1	-1.1	+1.1	1957	
Terrace gravel at Missoula, Montana	-17.4	+1.98	+1.40	+1.55	1960	
Alluvial sand and gravel, Platte River Valley, Nebraska (U.S. well no. 6)	-2.04	+3.37	+1.86	+2.74	1935	February high.
Alluvial valley fill in Steptoe Valley, Nevada	-10.05	+2.96	+0.22	+0.74	1950	February high.
Ogallala Formation, Kansas Agricultural Experiment Station at Colby in the High Plains of northwestern Kansas	-124.34	-7.66	.....	-0.32	1947	
Alluvium and Paso Robles, clay, sand, and gravel, Santa Maria Valley, California	-140.65	+7.80	+4.61	-14.19	1957	
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15)	-114.60	-38.50	-3.4	-3.6	1951	
Berrendo-Smith well in San Andres Limestone, Roswell artesian basin of Pecos Valley, New Mexico (U.S. well no. 1-A)	-54.38	-1.20	+1.28	-0.14	1966	
Hueco bolson, El Paso area, Texas	-258.73	-16.03	+0.17	-0.47	1965	February low.
Evangeline aquifer, Houston area, Texas	-320.68	-26.82	+6.26	-0.23	1965	

average, but remained below average in key wells elsewhere in the State. In other States, including Arkansas and Louisiana, below-average water levels were generally limited to aquifers in heavily pumped areas although below-average levels persisted even in lightly pumped aquifers in parts of Virginia.

In the central and western Great Lakes States, declining water levels were common in Michigan, Minnesota, Ohio, and Wisconsin. Levels near end of month remained above average in Michigan and Minnesota, were near average in Wisconsin, and were below average in Ohio. In the two key wells in Iowa, levels rose and remained above average.

In the West, rising levels predominated, especially in the far West. In an observation well in alluvium in Nebraska (in Platte River Valley, near Ashland) and one in Nevada (in Steptoe Valley), levels near end of February were highest of record for that month in more than 30 years of record at those sites. Levels near end of month remained above average in the observation wells reported for Nebraska and Washington. Elsewhere, patterns of above and below averages were mixed except for below-average levels prevailing in most aquifers that are heavily pumped.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF FEBRUARY 1983

[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

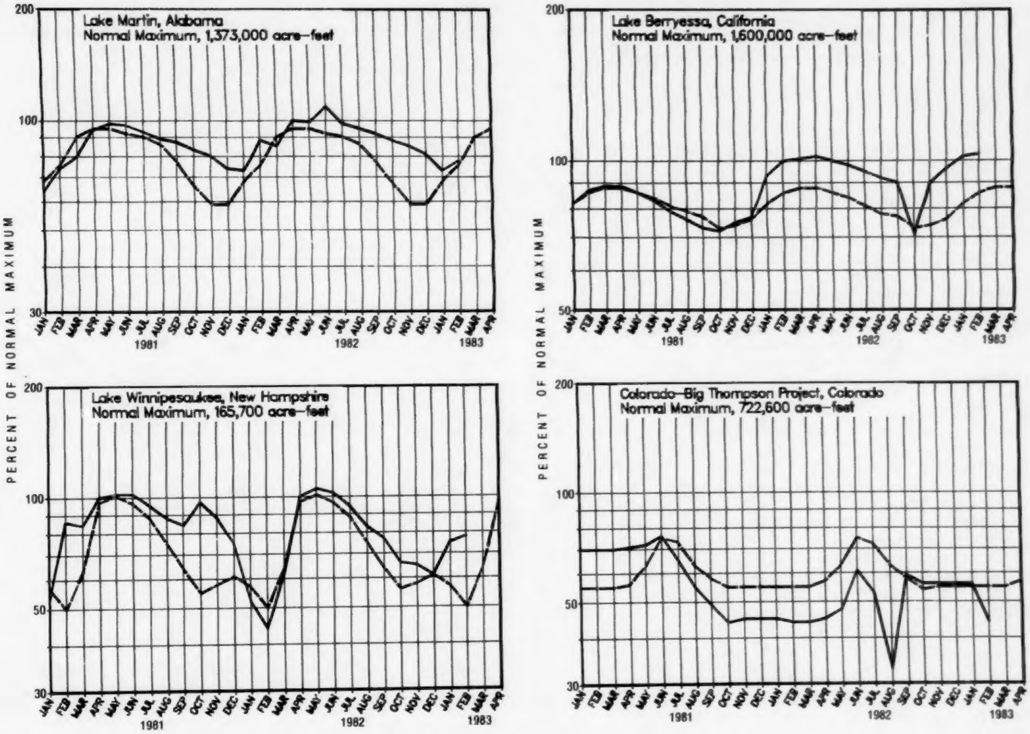
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Feb. 1983	End of Feb. 1982	Average for end of Feb.	End of Jan. 1983	
NORTHEAST REGION					
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	42	82	59	39	[b]226,300
QUEBEC					
Allard (P)	65	38	30	84	280,600
Gouin (P)	58	47	51	61	6,954,000
MAINE					
Seven reservoir systems (MP)	50	52	40	55	4,098,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	46	20	18	54	76,450
Lake Francis (FPR)	49	23	30	66	99,310
Lake Winnipesaukee (PR)	78	44	50	75	165,700
VERMONT					
Harriman (P)	44	36	31	57	116,200
Somerset (P)	62	50	51	68	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	74	75	69	76	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	51	43	36	47	786,700
Indian Lake (FMP)	58	52	41	64	103,300
New York City reservoir system (MW)	67	78	...	56	1,680,000
NEW JERSEY					
Wanaque (M)	92	87	79	80	85,100
PENNSYLVANIA					
Allegheny (FPR)	31	24	23	33	1,180,000
Pymatuning (FMR)	85	83	86	84	188,000
Raystown Lake (FR)	68	53	50	67	761,900
Lake Wallenpaupack (PR)	71	51	50	66	157,800
MARYLAND					
Baltimore municipal system (M)	64	74	89	62	255,800
SOUTHEAST REGION					
NORTH CAROLINA					
Bridgewater (Lake James) (P)	90	85	83	87	288,800
Narrows (Badin Lake) (P)	100	92	101	89	128,900
High Rock Lake (P)	92	66	75	45	234,800
SOUTH CAROLINA					
Lake Murray (P)	87	90	70	85	1,614,000
Lakes Marion and Moultrie (P)	92	91	76	71	1,862,000
SOUTH CAROLINA--GEORGIA					
Clark Hill (FP)	85	85	66	77	1,730,000
GEORGIA					
Burton (PR)	75	78	68	73	104,000
Sinclair (MPR)	93	93	86	91	214,000
Lake Sidney Lanier (FMPR)	65	50	57	63	1,686,000
ALABAMA					
Lake Martin (P)	78	88	76	73	1,373,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	39	50	39	34	2,229,300
Douglas Lake (FPR)	24	22	22	14	1,394,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	51	56	49	43	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	45	53	41	38	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	51	58	47	46	1,478,000
WESTERN GREAT LAKES REGION					
WISCONSIN					
Chippewa and Flambeau (PR)	39	39	25	57	365,000
Wisconsin River (21 reservoirs) (PR)	41	18	17	66	399,000
MINNESOTA					
Mississippi River headwater system (FMR)	18	18	18	20	1,640,000
MIDCONTINENT REGION					
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	86	70	79	86	22,700,000
SOUTH DAKOTA					
Angostura (I)	94	57	75	89	127,600
Belle Fourche (I)	95	43	53	90	185,200
Lake Francis Case (FIP)	73	72	73	67	4,834,000
Lake Oahe (FIP)	84	71	...	82	22,530,000

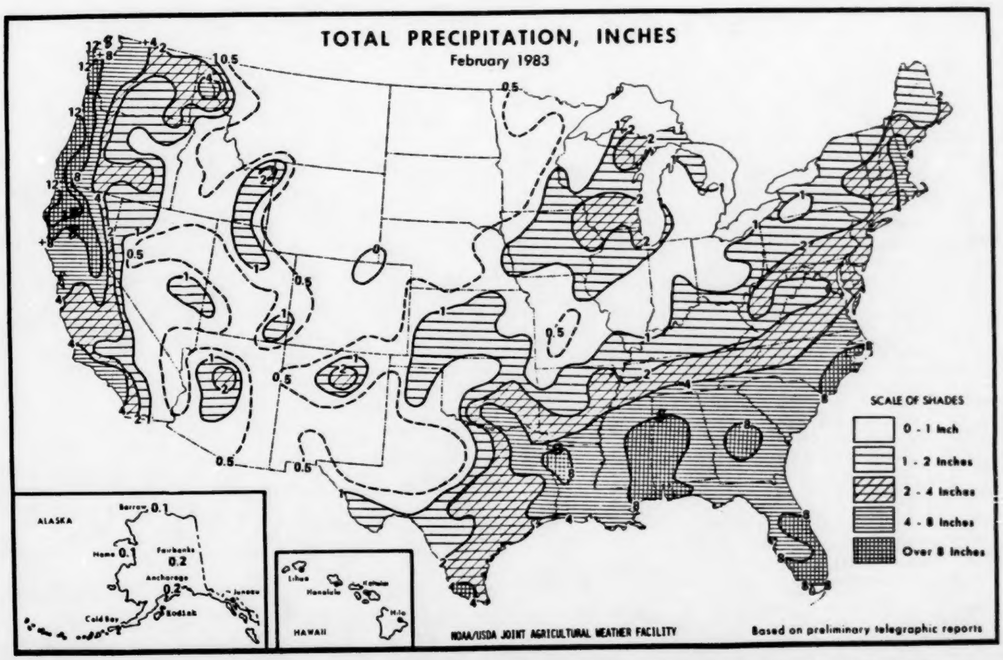
Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	Percent of normal maximum				Normal maximum (acre-feet)[a]
	End of Feb. 1983	End of Feb. 1982	Average for end of Feb.	End of Jan. 1983	
MIDCONTINENT REGION—Continued					
SOUTH DAKOTA—Continued					
Lake Sharpe (FIP)	102	102	97	101	1,725,000
Lewis and Clarke Lake (FIP)	78	79	82	92	477,000
NEBRASKA					
Lake McConaughy (IP)	82	80	74	81	1,948,000
OKLAHOMA					
Eufaula (FPR)	105	102	83	89	2,378,000
Keystone (FPR)	90	100	90	79	661,000
Tenkiller Ferry (FPR)	104	110	90	104	628,200
Lake Altus (FIMR)	59	16	52	53	133,000
Lake O'The Cherokees (FPR)	59	98	79	93	1,492,000
OKLAHOMA--TEXAS					
Lake Texoma (FMPRW)	94	94	87	89	2,722,000
TEXAS					
Bridgeport (IMW)	86	100	44	85	386,400
Canyon (FMR)	94	93	76	94	385,600
International Amistad (FIMPW)	88	103	85	88	3,497,000
International Falcon (FIMPW)	71	91	76	72	2,668,000
Livingston (IMW)	103	101	84	101	1,788,000
Possum Kingdom (IMPRW)	88	88	95	88	570,200
Red Bluff (PI)	17	19	31	17	307,000
Toledo Bend (P)	99	90	85	91	4,472,000
Twin Buttes (FIM)	37	50	33	37	177,800
Lake Kemp (IMW)	87	59	85	84	268,000
Lake Meredith (FWM)	52	34	36	51	796,900
Lake Travis (FIMPRW)	82	98	81	79	1,144,000
THE WEST					
WASHINGTON					
Ross (PR)	46	40	41	66	1,052,000
Franklin D. Roosevelt Lake (IP)	98	91	67	101	5,022,000
Lake Chelan (PR)	35	40	36	45	676,100
Lake Cushman (PR)	80	92	85	47	359,500
Lake Merwin (P)	99	135	96	100	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	61	63	64	66	1,235,000
Coeur d'Alene Lake (P)	98	198	52	71	238,500
Pend Oreille Lake (FP)	77	82	53	83	1,561,000
IDAHO--WYOMING					
Upper Snake River (8 reservoirs) (MP)	77	65	71	70	4,401,000
WYOMING					
Boysen (FIP)	68	68	66	75	802,000
Buffalo Bill (IP)	78	52	62	83	421,300
Keyhole (F)	34	23	45	32	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	59	45	48	57	3,056,000
COLORADO					
John Martin (FIR)	17	12	16	14	364,400
Taylor Park (IR)	64	39	54	66	106,200
Colorado–Big Thompson project (I)	44	44	55	56	722,600
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)	87	62	...	88	31,620,000
UTAH--IDAHO					
Bear Lake (IPR)	78	64	57	80	1,421,000
CALIFORNIA					
Folsom (FIP)	64	65	59	68	1,000,000
Hetch Hetchy (MP)	72	57	28	77	360,400
Isabella (FIR)	59	32	28	49	568,100
Pine Flat (FI)	66	61	56	61	1,001,000
Clair Engle Lake (Lewiston) (P)	87	86	80	85	2,438,000
Lake Almanor (P)	88	93	51	85	1,036,000
Lake Berryessa (FIMW)	103	100	87	102	1,600,000
Millerton Lake (FI)	84	78	66	76	503,200
Shasta Lake (FIPR)	80	83	75	85	4,377,000
CALIFORNIA--NEVADA					
Lake Tahoe (IPR)	75	66	53	87	744,600
NEVADA					
Rye Patch (I)	91	31	59	90	194,300
ARIZONA--NEVADA					
Lake Mead and Lake Mohave (FIMP)	93	89	68	92	27,970,000
ARIZONA					
San Carlos (IP)	34	23	21	16	1,073,000
Salt and Verde River system (IMPR)	82	67	44	79	2,073,000
NEW MEXICO					
Conchas (FIR)	75	46	80	73	330,100
Elephant Butte and Caballo (FIPR)	44	36	31	42	2,453,000

[a]1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.
[b]Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, JANUARY 1981 TO FEBRUARY 1983

Dashed line indicates average of month-end contents. Solid line indicates current period.





(From Weekly Weather and Crop Bulletin published by National Weather Service and Department of Agriculture.)

FLOW OF LARGE RIVERS DURING FEBRUARY 1983

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	February 1983					
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951–80	Change in discharge from previous month (percent)	Discharge near end of month		
							Cubic feet per second	Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,690	9,647	3,058	155	-46	1,600	1,030	28
01318500	Hudson River at Hadley, N.Y	1,664	2,909	2,580	151	+56	1,700	1,100	28
01357500	Mohawk River at Cohoes, N.Y	3,456	5,734	5,000	100	+47	4,350	2,811	28
01463500	Delaware River at Trenton, N.J	6,780	11,750	15,040	123	+75	10,300	6,660	28
01570500	Susquehanna River at Harrisburg, Pa	24,100	34,530	39,700	98	+121	28,500	18,420	28
01646500	Potomac River near Washington, D.C.	11,560	[1] 11,490	15,800	99	+235	21,400	13,830	28
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	14,000	156	+125	12,200	7,890	28
02131000	Pee Dee River at Peedee, S.C	8,830	9,851	24,500	161	+108	26,600	17,190	28
02226000	Altamaha River at Doctortown, Ga	13,600	13,880	40,710	184	+59	52,800	34,130	27
02320500	Suwannee River at Branford, Fla	7,880	6,987	12,200	151	+113	17,500	11,310	28
02358000	Apalachicola River at Chattahoochee, Fla	17,200	22,570	51,900	163	+36	41,100	26,560	28
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala	15,400	23,300	85,960	191	+68	50,400	32,570	28
02489500	Pearl River near Bogalusa, La	6,630	9,768	51,500	303	+39	40,800	26,370	28
03049500	Allegheny River at Natrona, Pa	11,410	[1] 19,480	18,230	71	-15	13,000	8,400	24
03085000	Monongahela River at Braddock, Pa.	7,337	[1] 12,510	15,100	82	+67	19,200	12,410	24
03193000	Kanawha River at Kanawha Falls, W. Va	8,367	12,590	20,300	107	+179	18,700	12,090	27
03234500	Scioto River at Higby, Ohio	5,131	4,547	3,426	48	+19	2,080	1,344	28
03294500	Ohio River at Louisville, Ky[2]	91,170	116,000	136,600	78	+44	134,700	87,060	21
03377500	Wabash River at Mount Carmel, Ill	28,635	27,220	31,400	84	-43	18,500	11,960	28
03469000	French Broad River below Douglas Dam, Tenn	4,543	6,798	12,529	122	+78	......	......	..
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis[2]	6,150	4,163	4,226	117	+15	5,047	3,261	26
04264331	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y[3]	299,000	242,700	244,790	105	+6	269,000	173,900	28
050115	St. Maurice River at Grand Mere, Quebec	16,300	25,150	14,500	236	-4	17,200	11,120	28
05082500	Red River of the North at Grand Forks, N. Dak	30,100	2,551	1,500	135	-4	1,270	820	25
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	10,800	116	-20	10,800	6,980	22
05330000	Minnesota River near Jordan, Minn.	16,200	3,402	3,671	727	+13	10,600	6,850	27
05331000	Mississippi River at St. Paul, Minn	36,800	[1] 10,610	10,655	215	-8	21,500	13,900	28
05365500	Chippewa River at Chippewa Falls, Wis	5,600	5,100	5,374	163	-1	7,240	4,679	25
05407000	Wisconsin River at Muscoda, Wis	10,300	8,617	10,782	156	+10	13,000	8,400	27
05446500	Rock River near Joslin, Ill	9,551	5,873	7,840	177	+1	11,500	7,430	28
05474500	Mississippi River at Keokuk, Iowa	119,000	62,620	84,650	204	+12	131,200	84,800	28
06214500	Yellowstone River at Billings, Mont	11,796	7,038	2,910	107	-13	2,870	1,854	28
06934500	Missouri River at Hermann, Mo	524,200	79,490	92,100	187	+17	125,000	80,800	25
07289000	Mississippi River at Vicksburg, Miss[4]	1,140,500	576,600	764,700	113	-27	725,000	468,600	28
07331000	Washita River near Dickson, Okla.	7,202	1,368	1,446	348	+220	1,250	807	24
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex	9,730	725	712	147	+36	790	510	28
09315000	Green River at Green River, Utah.	40,600	6,298	4,672	156	+31	......	......	..
11425500	Sacramento River at Verona, Calif	21,257	18,820	69,650	183	+79	60,000	39,000	28
13269000	Snake River at Weiser, Idaho	69,200	18,050	29,700	152	-1	36,220	23,409	24
13317000	Salmon River at White Bird, Idaho	13,550	11,250	5,630	122	+3	7,230	4,672	27
13342500	Clearwater River at Spalding, Idaho	9,570	15,480	16,900	171	+81	18,420	11,905	27
14105700	Columbia River at The Dalles, Oreg[5]	237,000	193,100	137,600	133	+8	279,400	180,580	23
14191000	Willamette River at Salem, Oreg.	7,280	23,510	66,080	150	+25	99,960	64,605	23
15515500	Tanana River at Nenana, Alaska.	25,600	23,460	6,707	105	+17	6,600	4,270	28
8MF005	Fraser River at Hope, British Columbia.	83,800	96,290	34,321	101	+0	40,253	26,016	28

[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

DISSOLVED SOLIDS AND WATER TEMPERATURES FOR FEBRUARY AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	February data of following calendar years	Stream discharge during month	Dissolved-solids concentration during month[a]		Dissolved-solids discharge during month[a]			Water temperature during month[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean (tons per day)	Minimum (tons per day)	Maximum (tons per day)	Mean in°C	Mini-mum, in°C	Maxi-mum, in°C
	NORTHEAST										
01463500	Delaware River at	1983	*15,425	69	98	3,628	2,302	9,158	2.5	0	5.0
	Trenton, N.J.	1945–82	13,220	61	144	....	647	11,000	.....	0	8.5
	(Morrisville, Pa.)	(Extreme yr)		(1954)	(1977)		(1976)	(1981)			
			[c]12,240								
04264331	St. Lawrence River at	1983	245,000	165	166	109,000	93,700	120,000	1.0	1.0	1.0
	Cornwall, Ontario, near	1976–82	250,500	165	168	96,100	90,000	134,000	0.5	0.5	1.0
	Massena, N.Y.	(Extreme yr)		(1981–82)	(1976,78,79)		(1977)	(1978)			
	median streamflow at		[c]233,100								
	Ogdensburg, N.Y.										
	SOUTHEAST										
0728900	Mississippi River at	1983	**764,700	....	....	....	....	....	.....	.....	.....
	Vicksburg, Miss.	1976–82	576,000	155	286	304,000	108,000	543,000	4.5	0	10.5
		(Extreme yr)		(1982)	(1981)		(1977)	(1982)			
			[c]679,000								
	WESTERN GREAT LAKES REGION										
03612500	Ohio River at lock and dam	1983	362,000	195	205	....	147,000	276,000	.....	3.5	7.0
	53, near Grand Chain, Ill.	1955–82	441,400	98	308	....	44,900	419,000	.....	0	10.0
	(25 miles west of Paducah,	(Extreme yr)		(1957)	(1967)		(1955)	(1974)			
	Ky.; streamflow station		[c]410,900								
	at Metropolis, Ill.)										
	MIDCONTINENT										
06934500	Missouri River at Hermann,	1983	92,100	321	448	90,900	59,200	125,000	4.0	1.0	8.0
	Mo. (60 miles west of St.	1976–82	55,430	208	530	57,800	23,500	161,000	2.5	0	12.0
	Louis, Mo.)	(Extreme yr)		(1979)	(1981)		(1977)	(1982)			
			[c]49,190								
	WEST										
14128910	Columbia River at	1983	223,000	96	108	62,400	46,700	76,700	4.5	4.0	5.5
	Warrendale, Oreg.	1976–82	178,700	87	128	49,400	24,800	106,500	4.0	0.5	7.0
	(streamflow station	(Extreme yr)		(1976)	(1977)		(1977)	(1982)			
	at The Dalles, Oreg.)		[c]103,550								

[a]Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: [(1.8 X°C) + 32] = °F.
[c]Median of monthly values for 30-year reference period, water years 1951–80, for comparison with data for current month.
*Water-temperature records are not available for last three days of month.
**Dissolved-solids and water-temperature records are not available for February.

ESTIMATED USE OF WATER IN THE UNITED STATES IN 1980

The abstract, graph, and table below are from the report, *Estimated use of water in the United States in 1980*, by Wayne B. Solley, Edith B. Chase, and William B. Mann IV, U.S. Geological Survey Circular 1001, 56 pages, 1983. This circular may be obtained free on request to Eastern Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA 22304.

ABSTRACT

Water use in the United States in 1980 was estimated to be an average of 450 bgd (billion gallons per day) of fresh and saline water for offstream uses—an 8-percent increase from the 1975 estimate and a 22-percent increase from the 1970 estimate. Average per capita use for all offstream uses was 2,000 gpd (gallons per day) of fresh and saline water, and 1,600 gpd of fresh water; this represents a slight increase since 1975.

Offstream uses include (1) public supply (domestic, public, commercial, and industrial uses), (2) rural (domestic and livestock uses), (3) irrigation, and (4) self-supplied industrial uses (including thermoelectric power). From 1975 to 1980, public-supply use increased 15 percent to 34 bgd, rural use increased 14 percent to 5.6 bgd, irrigation use increased 7 percent to 150 bgd, and self-supplied industrial use increased 8 percent to 260 bgd. Within the industrial category, thermoelectric power generation increased 9 percent to 210 bgd, whereas other self-supplied industrial uses remained approximately constant at 45 bgd.

Total fresh water consumed—that part of water withdrawn that is no longer available for subsequent use—by these offstream uses increased 7 percent to 100 bgd, with irrigation accounting for the largest part of water consumed, estimated at 83 bgd.

Estimates of withdrawals by source indicate that from 1975 to 1980, total ground-water withdrawals increased 7 percent to 89 bgd, and total surface-water withdrawals increased 9 percent to 360 bgd. Total saline-water withdrawals increased by about 2 bgd to 72 bgd, of which 71 bgd was saline surface water. Reclaimed sewage amounted to about 0.5 bgd in 1980, and 11-percent decrease from 1975.

A comparison of withdrawals by States indicates that California withdrew the most water for offstream use, 54 bgd, more than double the amounts withdrawn by Florida and Texas, the next largest users. A similar comparison by water-resources regions indicates that the California and Mid-Atlantic regions accounted for nearly one quarter of the total water withdrawn in the United States. Total withdrawals for offstream use in the eastern water-resources regions, which include the Mississippi and Souris Rivers, accounted for 55 percent of the Nation's total withdrawals. Fresh-water consumptive use in the East was 8 percent of the total eastern withdrawals and accounted for only 19 percent of the national total consumptive use of 100 bgd. By comparison, consumptive use in the western water-resources regions accounted for 41 percent of the withdrawals in the West. The higher consumptive use in the West can be attributed to the fact that 91 percent of the total water withdrawn for irrigation occurred in the West and irrigation accounts for the largest part of water consumed.

Water used for hydroelectric power generation, an instream use, remained unchanged from 1975 at 3,300 bgd. This is in contrast to the increasing trend from 1950 to 1975.

Although 1980 estimates of water use were higher than the 1975 estimates for all offstream categories, trends established during the periods 1970 to 1975 and 1975 to 1980 indicate a general slackening in the rate of increase of total withdrawals in comparison to the period 1965 to 1970.

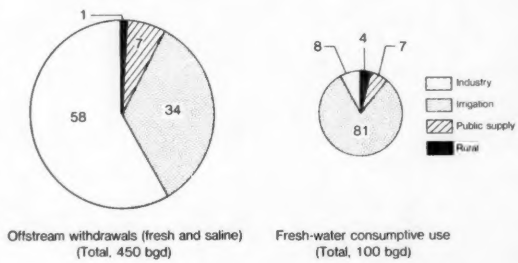


Figure 1. Percentage of total offstream withdrawals and fresh-water consumptive use, by categories of use, 1980.

Table 1.—*SUMMARY OF ESTIMATED WATER USE IN THE UNITED STATES, IN BILLION GALLONS PER DAY, AT 5-YEAR INTERVALS, 1950–80*

[Data for 1950–75 adapted from MacKichan (1951, 1957), MacKichan and Kammerer (1961), Murray (1968), and Murray and Reeves (1972, 1977). The data generally are rounded to two significant figures; however, the percentage changes are calculated from unrounded numbers]

	Estimated water use in billion gallons per day							Percentage increase (+) or decrease (−)	
	1950[1]	1955[1]	1960[2]	1965[2]	1970[3]	1975[4]	1980[4]	1970–75	1975–80
Population, in millions	150.7	164.0	179.3	193.8	205.9	[5]216.4	229.6	+5	+6
Offstream use:									
Total withdrawals	[5]180	240	270	310	370	420	450	+12	+8
Public supply	14	17	21	24	27	29	34	+8	+15
Rural domestic and livestock	3.6	3.6	3.6	4.0	4.5	4.9	5.6	+10	+14
Irrigation	[5]89	110	110	120	130	140	150	+11	+7
Self-supplied industrial:									
Thermoelectric power use	40	72	100	130	170	200	210	+18	+9
Other industrial uses	37	39	38	46	47	45	45	−6	+1
Source of withdrawals:									
Ground water:									
Fresh	34	47	50	60	68	82	88	+22	+7
Saline	([6])	.6	.4	.5	1	1	.9	−6	−5
Surface water:									
Fresh	[5]140	180	190	210	250	260	290	+5	+10
Saline	10	18	31	43	53	69	71	+31	+2
Reclaimed sewage	([6])	.2	[5].6	.7	.5	.5	.5	+2	−11
Consumptive use	**([6])**	**([6])**	**61**	**77**	**[7]87**	**[7]96**	**[7]100**	**+10**	**+7**
Instream use:									
Hydroelectric power	1,100	1,500	2,000	2,300	2,800	3,300	3,300	+21	−2

[1] 48 States and District of Columbia.
[2] 50 States and District of Columbia.
[3] 50 States, District of Columbia, and Puerto Rico.
[4] 50 States, District of Columbia, Puerto Rico, and Virgin Islands.
[5] Corrected from published report.
[6] Data not available.
[7] Fresh water only.

NATIONAL WATER CONDITIONS

February 1983

Based on reports from the Canadian and U.S. Field offices; completed March 9, 1983

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and 164 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the points shown by the arrows.

Streamflow for the current month is compared with flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile).

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows for each month of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for February are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

METRIC EQUIVALENTS OF UNITS USED IN THE NATIONAL WATER CONDITIONS

1 foot = 0.3048 meter

1 acre-foot = 1,233 cubic meters

1 million cubic feet = 28,320 cubic meters

1 cubic foot per second =
0.02832 cubic meters per second =
1.699 cubic meters per minute

1 cubic foot per second · day = 2,447 cubic meters

1 mile = 1.609 kilometers

1 square mile = 259 hectares = 2.59 square kilometers

1 million gallons = 3,785 cubic meters =
3.785 million liters

1 million gallons per day = 694.4 gallons per minute =
2.629 cubic meters per minute =
3,785 cubic meters per day

(Round-number conversions, to nearest four significant figures)

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